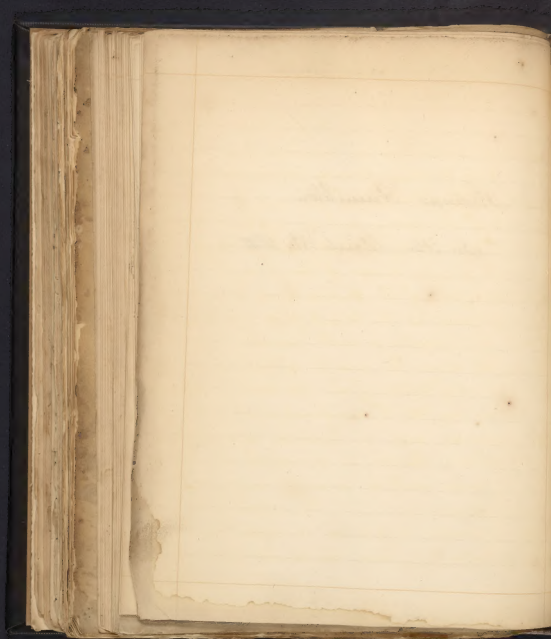


Thomas Hamilton

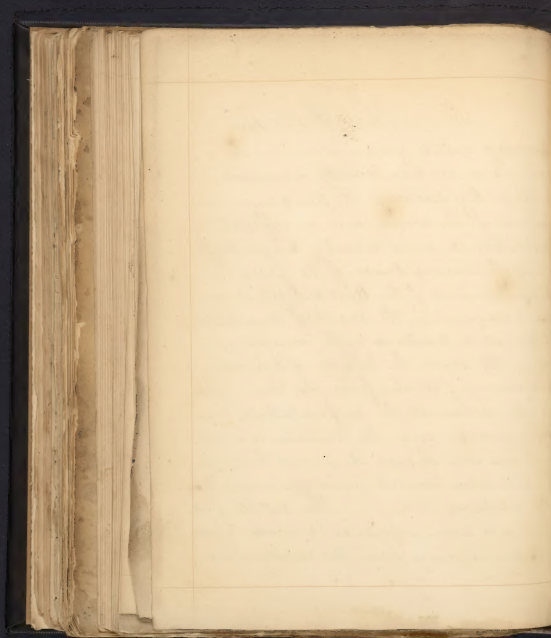
admitted March 15th 1820



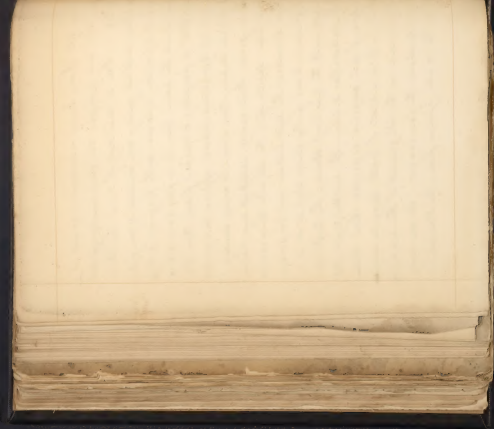
The Disease

concerning which we are about to treat is that which Authors usually denominate Cholera Infantum; it prevails in various parts of the world, and in different latitudes, but in every Country rages chiefly during the warmer season of the year; in the Southern parts of the United States it generally commences in the month of May or close of April and continues with increasing prevalence till about the middle of September or beginning of October; from this time it gradually declines till the uniformly cold season commences, and this transition to a cooler temperature though it prevents the origin of recent cases does not invariably cure protracted or chronic ones;

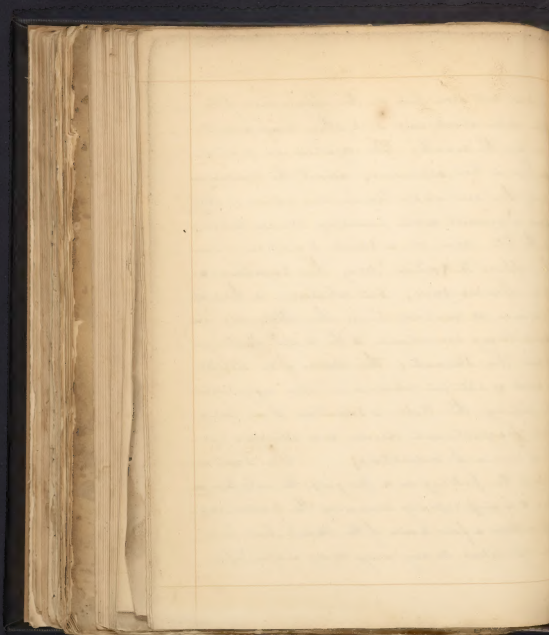
The subjects of this disease as its name imports are Children whose ages generally vary from two months to two



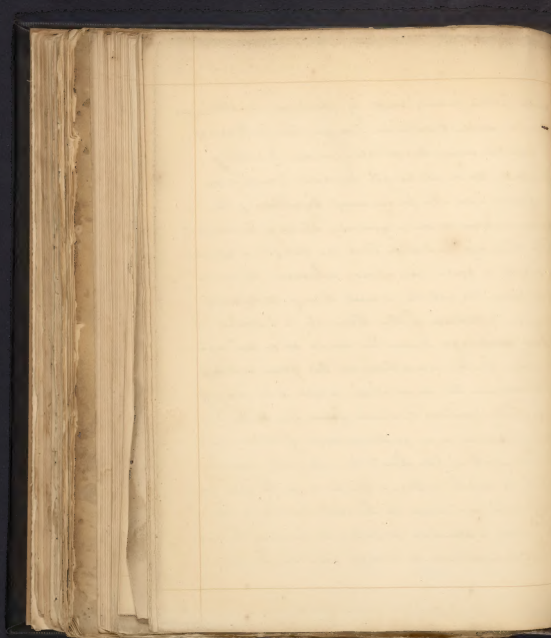
Years yet than more advanced as well as some that are younger are occasionally affected by it; In a majority of Cases the child attacked, without giving any evident signs of previous indisposition is seized with frequent puking and about the same time or a few hours subsequent to it a purging commences; from these two prominent symptoms which appear to constitute the disease, many others seem to arise, among these are great thirst, anxiety, restlessness, and rapid emaciation, shortly after the attack the features appear shrunken, the eyes hollow and languid, and in severe Cases if the child sleep at all it is generally with the eyes half closed; the temperature of the extremities is below the healthy degree, but a degree of heat as great or greater than that which exists in a state of health may be uniformly perceived in the integuments of the head particularly about the forehead; at an early stage the matter ejected from the stomach is



bilious, but soon puts on the appearance of the
 food and drink and such other things as are ta-
 ken by the mouth; The dejections are more di-
 versified in their appearance; about the commen-
 cement they are copious, liquid, and yellow, or they
 have a greenish aspect resembling mucus mixed
 with bile, and in a small proportion of cases
 they appear to contain blood, they sometimes e-
 mit an offensive smell, but whatever be their ap-
 pearance at an early stage they ultimately as-
 sume a strong resemblance to the matter discharged
 from the stomach; the Child often attempts
 to suck or eat but whatever is taken aggravates
 the puking, the Pulse is sometimes slow but of-
 tener frequent and obscure and always a preca-
 rious source of indications; In some in-
 stances the puking and purging, the depression,
 and coldness, rapidly increasing the patient ex-
 piring within a few hours of the attack, but in a
 case less violent many days may elapse before



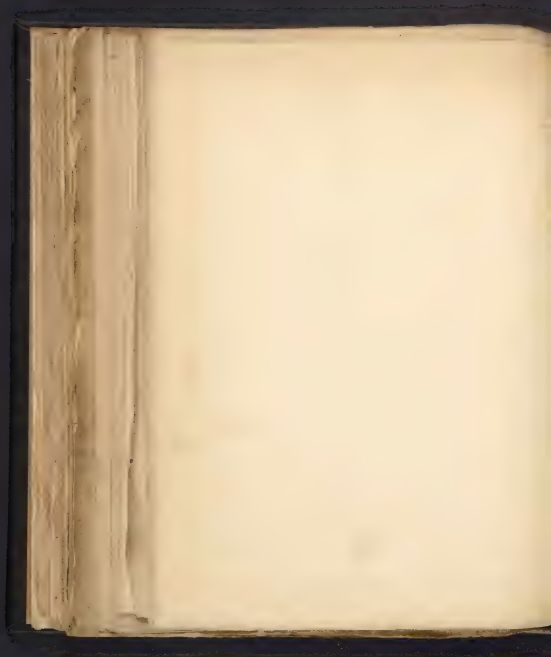
death takes place, and if the case be still
 life severe and continue longer the purking af-
 ter several days moderates, becomes partially
 suspended, and at length subsides leaving an
 irregular lax the prominent symptom, the
 appetite returns and is generally strong the child
 often craving the sweetest flesh as diet, it is how-
 ever subject to some variations, whenever the lax is
 least severe the appetite is most strong and every
 excessive repletion of the stomach is followed by
 profuse discharges from the bowels and an ag-
 gravation of other symptoms; in this form or stage
 of the disease the emaciation is apt to be progress-
 ing; these symptoms continue from a few weeks to a
 year or two, and in a greater number of instances con-
 tinue in death if not opposed by appropriate remedies;
 previous to death in these protracted cases the skin be-
 comes flaccid and hangs on the extremities like a loose
 envelope and is sometimes penetrated by the bones, the hy-
 peræsthetic countenance is strongly exhibited, the child is



pewish and pallid and retains much muscular strength
till death; a little redness and some redness
apt to appear in the Conjunctiva particularly about the
inner angles of the Eyes, in some cases the redness
is accompanied, & in certain Struggles, Contortions of the
limbs, and other signs of great suffering; in others, more
quietly but in most it appears to be more or less an
intermittent; Such is the aspect of most cases,

but it sometimes happens that the purging is from the first
inconceivable the purging being the most distressing symptom
and more rarely that they alternate with each other, the
child sometimes gives signs of pain in the bowels and
perhaps as often applies its hands to its head, showing that
part to be the seat of pain, and worms are occasionally
discharged from the bowels;

We should
have dispensed with this singular account of a disease fam-
iliar to Physicians generally was it not that an immediate
view of its leading traits seems necessary to its identifica-
tion and useful in supporting opinions and affording a
prognosis which as far as we know have not hitherto ob-



tained, Similar Considerations induce us to notice the cause, concerning which various opinions have been entertained. That Worms have no agency in its production we infer from its attacking and destroying Children at a stage of life in which worms are rarely found or known to produce disease, and from its appearing in Children more advanced without affording either during life or on dissection after death any proofs of the existence of worms, and also from those cases in which worms are known to attend differing in no essential point from others.

That Summer Fevers are not the cause we infer from this fact that it often arises in the southern states before these fevers abound, and where it is known that the sufferers have not used them; Occurring during the warm season only it is clear that it depends not on ~~attention~~ *attention* for its origin, yet this renders the disease more severe and obstinately durable so that if a Child



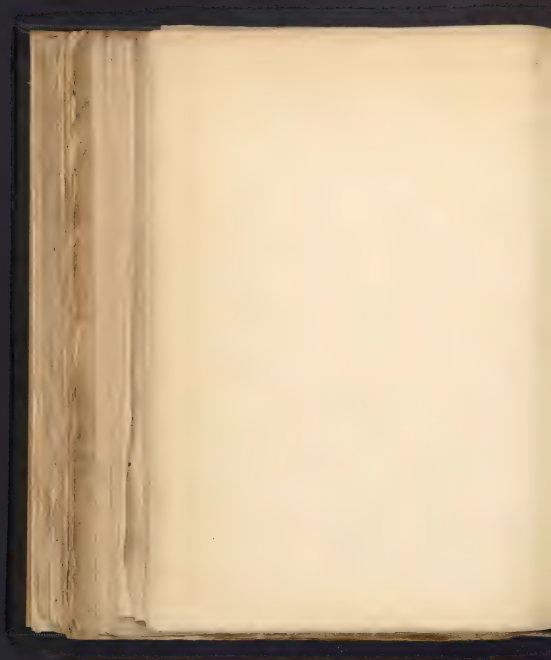
be attacked during dentition even though the
can be mild and the puking in a few days
subsides, yet the diarrhea with some variations in
its violence will often continue for a year or two,
a similar aggravation it is proper to observe is
apt to result from the eating of acid or copious
vegetable substances.

The season of
the year in which it arises together with many of its
symptoms incline us to believe that its cause how-
ever obscure in its nature is the same that pro-
duces bilious fever in adults; and that the diseases
are in fact the same a little varied in aspect by
the peculiarities of infantile structure; the high fe-
ver the regular exacerbations and remissions of
which authors speak we have rarely observed and
are not the symptoms just alluded to, whenever
they do attend they constitute Bilious fever of re-
gular type and should be so designated, in
the Southern States as well as in Menorca and
other places this fever in adults varies its symp-



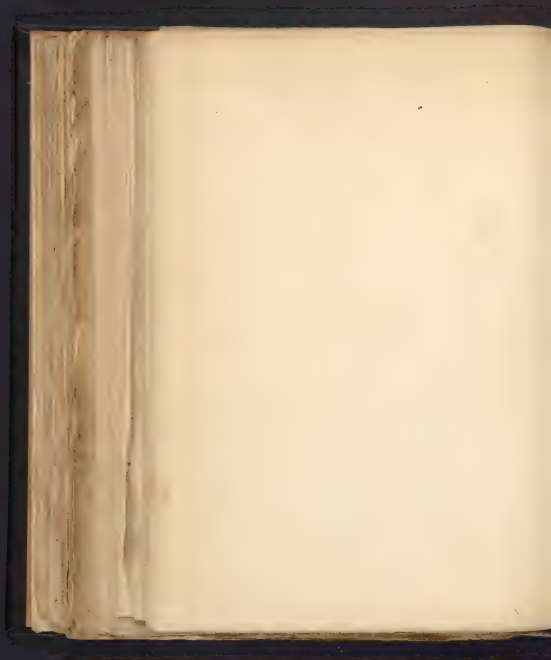
tons according to the peculiar habit of idiosyn-
 crasy of the patient and according to the parts
 chiefly affected so that it personates almost ev-
 ery disease incident to man; in Georgia the
 first sensible operations of its cause in a considerable
 proportion of cases, appear in the stomach produ-
 cing intense nausea, frequent puking, coldness of
 the extremities, cold sweats, great thirst, fre-
 quent small pills, and purging, all of which
 continue for many days, when if rightly man-
 aged they totally subside or more frequently
 pass into fever of regular type; these are truly Ca-
 ses of bilious fever embracing all the essential
 symptoms of Cholera Infantum and in a
 child would be so called, hence we are au-
 thorized to believe the cause of both to be the
 same and the diseases identical in nature.

In what way, or in how many
 different ways, regular fever destroys life we
 shall not here attempt to explain but con-

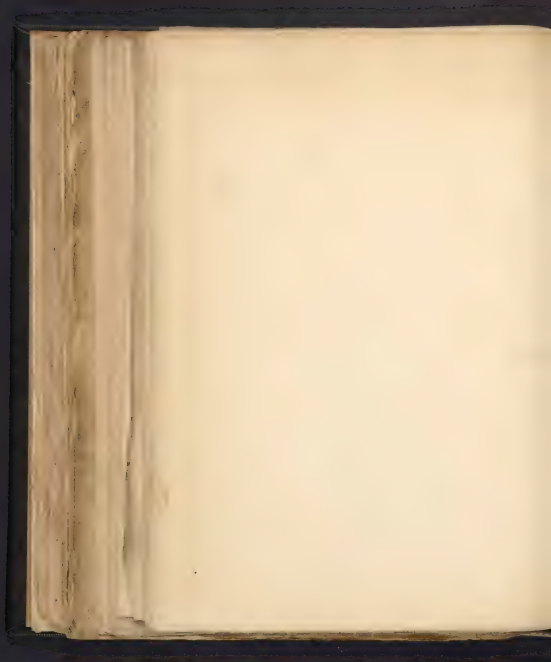


giving the explanation of such a question in relation to Cholera, necessary to the discovery of a rational and successful practice we must offer some observations directed to this object.

The Cause of this as well as of many other diseases we imagine to abound in the atmosphere, but whether it is a simple elementary substance set at liberty by the action of the sun upon the surface of the earth, or a noxious combination resulting from the decomposition of vegetable or animal ^{matter}, we cannot determine, but believe it to be applied in a material form to the internal coat of the stomach, where it makes its first morbid impressions, adverting to the saliva the act of deglutition and respiration the mode of its application can be easily imagined, like Tartar Emetic and many poisonous substances its effects continue long after it is totally ejected from the stomach, this organ in the adult subject is often so



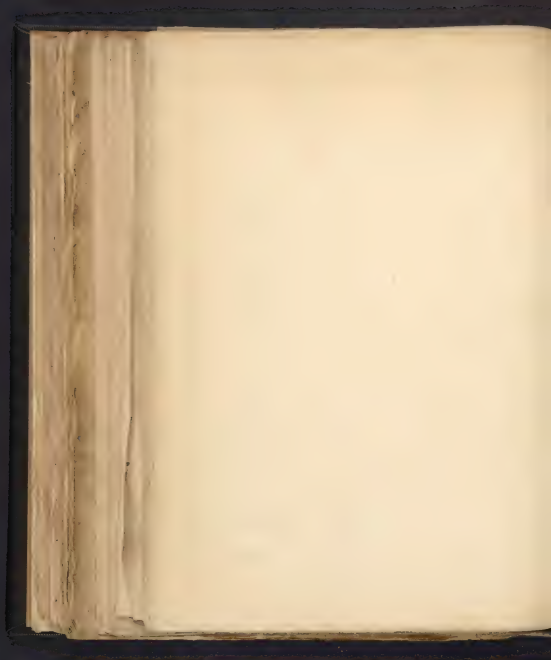
insusceptible of its action, or the morbid substance is so gradually introduced, or so diluted, or counteracted, as stimulating drink that if it act at all its action is not accompanied by gastric sensation, in this case irritation alone is produced and continues till through association with the organ primarily affected other parts and particularly the cerebral system assume a diseased condition; these secondary results give rise to painful sensations and other symptoms evincing the existence of general disease or regular intermittent fever; it also occasionally happens that the *Adult* is so susceptible of its influence that Cholera morbus is immediately induced and by the copious discharge of bile the morbid cause is literally washed from the stomach before it has had time to establish such permanent irritation as would eventually extend to the cerebral system; it likewise occurs at least in Southern latitudes that the stomach is so affected that all the symptoms above referred to as essential to Cholera Infantum are produced and



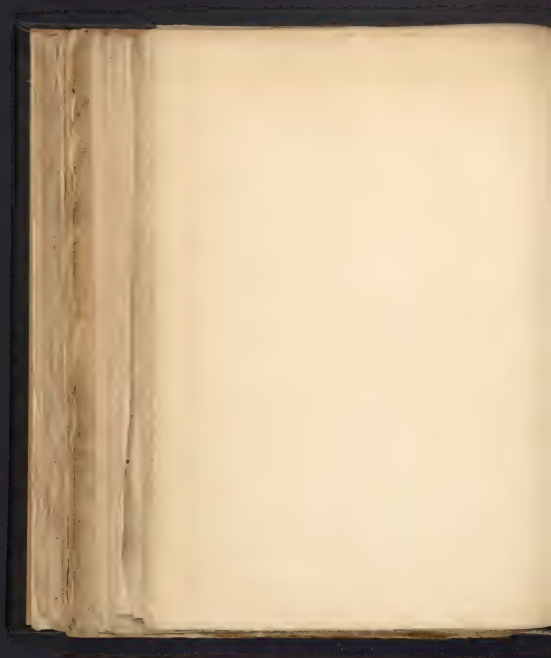
continue for many days, yet the primary irritation is so permanent, that when the Cause is totally ejected the Stomach has become quiet, and the absorption has vanished, the arterial system assumes that mode of action which gives rise to that of skin periodical exacerbations, and remissions, and all other symptoms constituting continual fever of regular type.

These observations relative to the disease and its Cause as they affect adults we have offered chiefly for the purpose of being more clearly understood in the application of our views to that form of the disease most incident to Children, it is however true that even among Children there several forms of the disease do occasionally occur but in Cholera Infantum distinctly so called no regular ^{intermittent} febrile is ^{ever} distinctly marked, though the action of the sanguiferous system is doubtless arranged and on this and its results immediately depend ~~great~~ ^{great} effects.

In Cholera Infantum the remote Cause in material form being applica



in immediate contact with the arterial surface of a stomach unaccustomed to the action of powerful or diversified stimulants, produces great irritation and perhaps equal sensation, and from these through the extensive sympathies of ^{the} stomach extreme depression or weak and irregular action of the arteries arise, and perhaps from this state of the arterial system results the Colic of the intestines; the frequent puking and purging and the disordered state of the sanguiferous vessels suspend nutrition, while the continued and increased action of the absorbents gives rise to thirst and conduces to rapid emanation; the diminution of excitement on the surface particularly of the extremities, produces an extraordinary determination of blood to the brain and on this depends the unusual degree of warmth in the forehead; All these symptoms thus connected, and thus dependent, correspond in intensity with the force of the remote cause, and strength of existing sympathies; they vary in

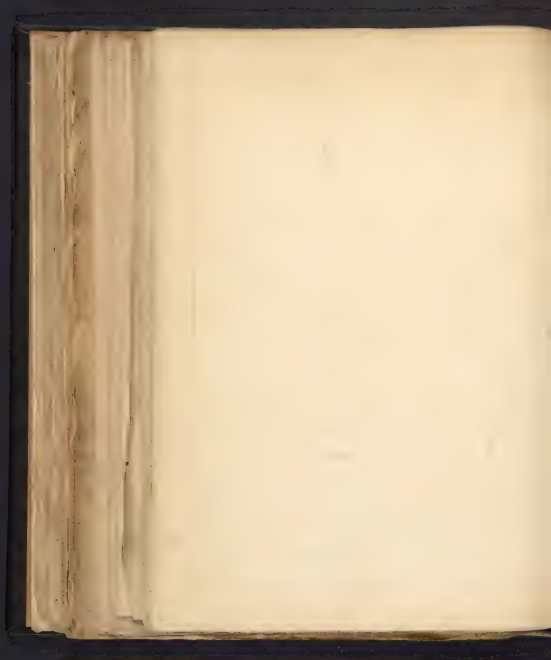


degree from a transitory and almost imperceptible
indisposition through different gradations of severe
and protracted Cases up to those violent attacks in
which death in a few hours supervenes, hence we are
authorized to believe that unfavourable issues are not
in every fatal Case produced in the same way, in
all those Cases which eventually unfavourably within
a few hours after the attack, it is probable that
from the influence which a diseased Stomach exerts
over the sanguiferous system, the smaller vessels
tend to convey blood, the brain naturally receiv-
ing a great proportion of this fluid in infancy
soon becomes surcharged and a slight degree of
apoplexy easily suspends the action of the heart
already greatly impeded by association with a
diseased Stomach.

It is however
reasonable to suppose, that the cause may act so
powerfully on the Stomach as to destroy the func-
tions of the heart independently of the apoplectic state,
but this rarely happens, if ever it does, it is in the



very earliest stage before the arteries have had
 an opportunity to react; In a very large
 proportion of fatal cases, indeed in almost all of se-
 veral days duration death takes place in neither of the
 above ways, but in consequence of some inflamma-
 tory action in the brain producing disorganization
 or atrophy and death of that part, or an effusion
 constituting Hydrocephalus Intermus, of this last
 affection there is a moderate degree compatible with
 life and under it the patient lives for many months
 or years the vascular excitement which produced it
 having subsided, but ^{the} ventricles of the brain be-
 ing occupied by a fluid and the Cranium being
 consequently a perfect Plenum any Cause which
 induces an extraordinary determination of blood
 to the head must produce apoplexy and death,
 it therefore happens that patients survive the vio-
 lence of the first stage and continue to live ^{7th} tho'
 in an emaciated state until the return of the
 warm season when being subject to the influence



of the same cause they die suddenly without giving the former signs of indisposition.

In all intorted cases an irregular lax attends, the appetite is subject frequent variations, and puking occasionally occurs, in explanation of this we must be allowed to advance, that between the brain and ^{alimentary} ~~intestine~~ canal a strong sympathy exists and that through this the brain in the beginning of the attack derives its disease from the stomach and being our disease reacts upon the parts primarily affected, thus by reciprocal influence is kept up the disordered state of these parts and their dependancies; In phrenitis of adults pain in the head and puking are symptoms yet they both often subside while the disease continues and eventually proves fatal, in this case though food be taken it does not produce healthy results, in like manner though in Cholera the pain in the head conformably to a law of the animal economy ceases, and conse-



^gently the nausea and vomiting, and though in
 consequence of all this a strong sensation of hu-
 nger should return, if ^{of} healthy digestion does
 not take place for notwithstanding the sym-
 pathetic effects of sensation have vanished the
 operation of ^{simultaneous} continuous, hinders the
 repletion of the stomach, ability of the bowels, from
 excretion of food, and irregular lax in chronic
 cases; we cannot deny that authors have
 on dissection observed tracts of inflammation
 in the coats of the stomach and bowels, and it is
 possible that these appearances may arise directly
 from the action of the cause on those parts, this
 however is very rare and can't more occur ex-
 cept where ^{and purging} puking, have been improperly re-
 strained, it is more probable that these marks of
 inflammation, as well as the diseased state of the
 mesentery, are altogether secondary and de-
 pend on the debility induced by the reaction of
 a diseased brain.



From all these considerations and from the discussions and observations on which they are founded, we esteem it a legitimate inference, that death in cholera results immediately from a diseased state of the brain, and regulated by this important fact we shall proceed to the theory of practice —

As our treatment resolves itself into the remedies suited to an early and into those suited to an advanced ^{stage}, and as changes requiring a modification of practice do really occur, we deem it convenient to consider the disease as consisting of a first, a second, and a third stage,

The first stage is that in which the stomach at the commencement, is so powerfully acted upon by the morbid cause, that a state of unmitigated depression is induced on the whole arterial system, so that there is no opportunity for reaction or the vis a tergo to produce local inflammation, this state — sometimes continuing for several days, the pulse is obscure occasion-



ally frequent, but often slow, the coldness of the extremities invariable, the nausea constant, puking frequent, and anxiety great; here the paleness, and coldness of the surface, shew that the blood having left the surface occupies the heart and larger vessels, and that from peculiarities of infantile structure the brain is surcharged, the forehead is hot and the region of the heart warm, from this view of the first stage it is clear that our most important Indication must be, to free the brain from its superabundant blood; to fulfill this, copious general bloodletting should be promptly practised, cupping glasses, cups or leeches should be applied to the temples, and warmth with stimulating frictions to the surface, by the last means a quantity of blood will be invited to the skin and the brain will be proportionally relieved, our next Indication is to compress the stomach and thereby prevent its sympathetic influence from producing inflammatory action in the brain; this can be done by the



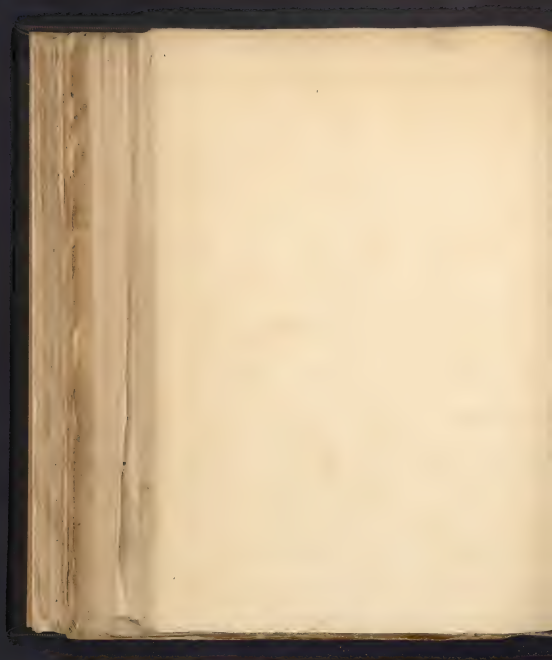
application of Epispastics or sinapians to the epigastric region, and by the exhibition of anodynes, these remedies will effectually suspend morbid operations till by appropriate steps we accomplish our third ~~Indication~~ ^{alimentary} which is, to expell the ~~chance~~ from the ~~intestines~~ ^{alimentary} Canal; This we should do by administering from one to three or four grains of Calomel every two or three hours till they operate aiding with Cast. oil or Theriac if necessary, in addition to its osmotic operation this preparation of mercury makes a ^{general} counter impression on the parts to which it is applied, and so affects the general system as to obviate local congestions.

In defence of our practice in this stage, we have to advance, that copious bloodletting so far from increasing depression greatly opens it; by unloading the larger vessels it enables them to propel a part of their contents into the smaller ones, and thus doubles the effect of venesection in removing the engorgement of vital parts; and



the Circumstances of this operation giving greater activity to the Sanguiferous system renders it necessary to exercise much Circumspection in the repetition of anodynes, lest they be administered after reaction and inflammatory excitement in the brain have commenced.

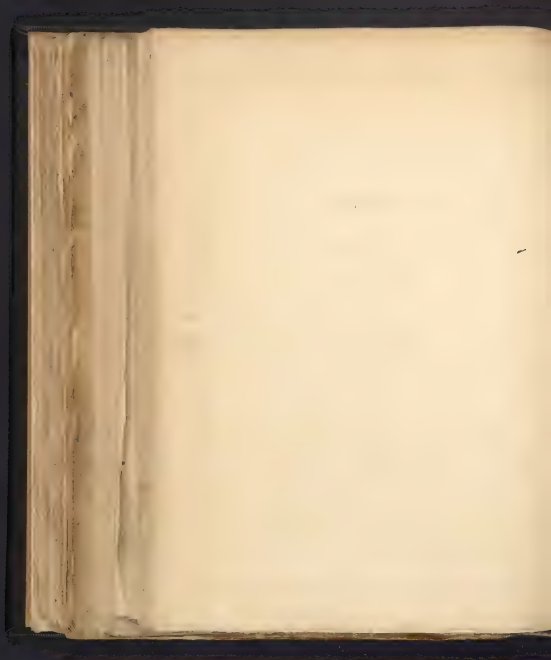
The Second stage is that in which the Stomach and bowels having totally expelled the cause its immediate effects begin to subside, the nausea is much abated, the puking is less frequent, the lax less constant, the thirst though it continues is not so distressing, a faint febrile glow appears irregularly, and the arteries at the wrists pulsate more perceptibly; in this stage the effusion has so far given way that the bloodvessels begin to react, and an inflammatory affection is beginning in the brain and this affection frequently terminates as a like disease among adults, but in the greater number of Cases it is nothing more than the acute stage of Hydrocephalus Internus



and usually venturates accordingly; Here it is obvious that our leading indication is to subdue arterial excitement in the brain, consequently we have again to appeal to the Canth, Cupping Glasses, leeches, and Calomel, and having by their use made considerable impression on the system, we should cover the whole

scalp with an epispaster; previous to the use of this however and while we are preparing for it by the other remedies the head should be shaved, and to it cold applications should be made.

It is here proper to observe that it frequently happens that the remote cause does not in its first impressions act with sufficient force to induce those symptoms characterizing what we have called the first stage; in this event if the cause be at all severe the constitution of parts will be such as commonly exists in the stage last described, consequently the remedies should be those last mentioned.



The third stage is that in which all the symptoms after continuing for some time have become ^{apparently} very mild, the appetite returns and is often voracious, yet the patient continues emaciated, and once in two or three weeks or as many months the ~~stage~~ suffers an aggravation of the lax some times accompanied by puking; these exacerbations are apt to succeed intemperate repasts of the stomach, but the debilitated state of the digestion organs on which they depend is clearly derived from the condition of the brain; in this stage that degree of effusion which is compatible with life and which constitutes Chronic Hydrocephalus has taken place, and either from the use of remedies or from other favourable circumstances its farther progress is suspended; from this form of the disease patients often recover and sometimes without a remedy, but until they do get well are at all times subject to die sud-



only whenever an extraordinary determination to the head is in any way induced;

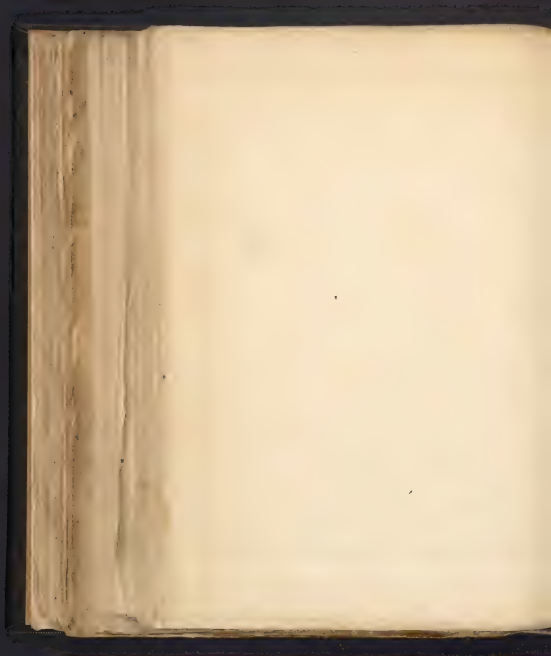
In these Cases the remedies are those last mentioned but here they require to be persevered in longer, and to be pushed to a much greater extent, but this being allways the consequence of a former stage should be invariably prevented by a timely resort to Copious evacuation; indeed in every stage or form of the disease bloodletting the principal remedy should be made to produce sensible effects, otherwise it will do but little good, great anxiety, nausea, or vomiting, should be brought on; so far, we believe that it has never proved successful where the several operations have produced a few efforts to vomit; used to this extent we have known ^{also} it more than once to succeed - six most hopeful Cases of from a year to eighteen months duration and in which the evacuation was extensive; in these a healthy state of the stomach



and bowels speedily succeding the recovery
 were brisk, the morbid excitement in the brain
 was doubly subdued, and the effused fluid com-
 pletely absorbed; we are sensible that very res-
 putable Anatomists doubt the existence of absorb^(only)
 in the brain, but if the vent of Cereb. like the
 does not afford ~~proof~~^{evidence} of their existence it at
 least challenges proof to the contrary; in the
 brain have been found many ounces of fluid
 which occupied a space greater than any
 natural or ordinary cavity in that organ,
 we therefore think the presence of absorbents
 strongly implied; in every stage
 great attention should be paid to diet, at
 first farinaceous matter and as the case be-
 comes more advanced and the patient grows
 better, some of the mildest preparations of flesh
 should be frequently given in small quan-
 tities, and repetitions of the Stomach should
 never be allowed; if the patient be too



young to use this as its best Nourishment
 can be derived from the breast, and the use
 of every kind of acid, and vapour, vege-
 table substance should be prohibited; after
 sufficient depletion and evident amendment
 flannel alone will suffice as an application
 to the skin and should never be omitted; the
 repetition of venesection, and of purging, must
 be regulated by the urgency of symptoms and a
 duration of the case; the same re-
 mark is applicable to all other remedies
 except the anodynes which should never
 be repeated after the extreme depression is removed;
 except however that after copious depletion ten-
 nesmus or great irritation in the rectum,
 should require the introduction of a moder-
 ate anodyne per anum; after using the
 debilitating remedies particularly venesection to a
 satisfactory extent it will not be improper
 to give tone to the stomach and bowels and to restrain



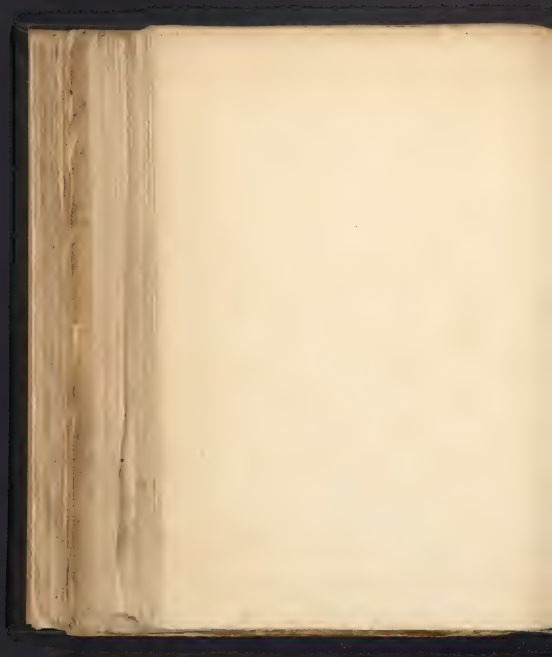
the diarrhea, for the disordered state of
 these parts though it be ^{now} Secondary has an
 unfavourable influence on the Cerebral dis-
 ease. therefore any of the astringents usually
 resorted to in such Cases will do, but the rem-
 edy to be most relied upon is sulph. Ziv. in
 this alone or Combined with sulph. Alum.
 They are most conveniently given in solution
 and should be repeated and continued accord-

ing to Circumstances; a Mixture of Mag-
 nesia and Rheubarb unites medicinal qualities
 peculiarly suited to some Cases and properly ad-
 ministered can be made to exert antacid and Lo-
 nis or laxative powers at discretion in advan-
 ced Cases of the third Stage or Chronic form,
 where the emaciation is great, and loss Considera-
 ble; and where the proper depurating remedies have
 not been used, the free use of purgatives would
 be not only unnecessary but prejudicial, here
 copious and repeated bleedings, frictions of



the surface, astringents, and blistering the head should be depended on, and no opium should be administered at least by the mouth.

However erroneous may be our views and explanations so hastily delivered, they have led to a practice the propriety of which has been amply confirmed by comparative experiments; they are also justified by dissections which though limited in number are pertinent and afford much support to our main position that this disease does not destroy life immediately by its effects on the alimentary canal nor on the general system, but by inducing a morbid state or hydrocephalic action in the brain. These dissections too intimated to detail authorize us to believe, that when, after a severe attack of Cholera of which the patient shall have died at an early stage, an examination is made, no traces of disease in itself destructive will be found in either the thoracic or

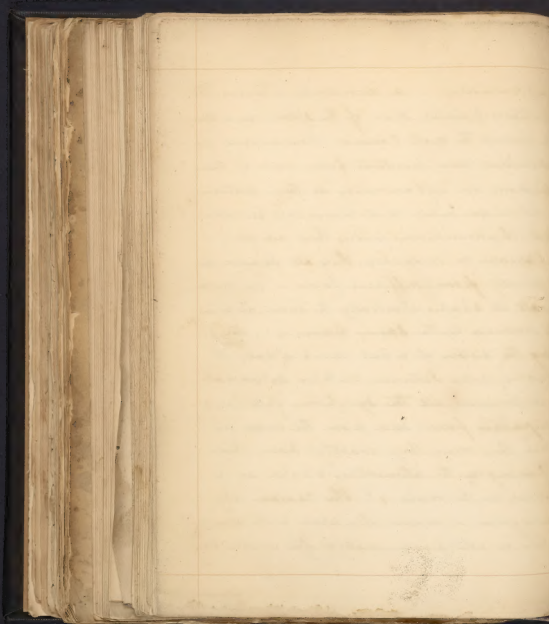


abdominal viscera, but that in the brain will be found an unusual accumulation of blood and an apparent multiplication of its vessels, and that when, after the disease has assumed a chronic form the patient dies and is examined there will be seen in addition to some morbid appearances in the abdomen a serous fluid in the ventricles of the brain varying in quantity from ^{one} ~~one~~ to six ounces, and in cases of this kind if the patient seem to pass suddenly into death or if it should have died convulsed there will also appear an accumulation of blood as above.

Whether the specific nature of hydrocephalic excitement admits of the epithel inflammatory or not we think it unnecessary in a practical point of view to determine, since it is clearly that species of morbid excitement which may be subdued by depletion.



ting remedies; a disordered, a tumid, and
 sometimes painful state of the spleen, and liver,
 are among the most common consequences of
 intermittent and remittent fevers, and if these
 affections are inflammatory in their nature
 or origin, we may most reasonably presume
 that Hydrocephalus is also, they are all
 symptomatic or secondary, they all proceed in-
 differently from different forms of a disease
 in all its shapes essentially the same, and in
 all produced by the same cause; in gi-
 ving the history of a well marked case of
 Hydrocephalus Internus, authors enumerate
 as its precursors, all the symptoms essential to
 idiopathic fever, and from the order in
 which they occur they doubtless have their
 beginning in the alimentary canal and
 terminate in the brain; the reason why
 these congestions or disorders when seated in the spleen
 or liver, do not produce death as often as when seat-



ted in the brain, is that an unimpaired state of the functions of those organs is life essential to life.

According to limited observation we believe that the aptitude of these several parts to derive a morbid condition from general febrile disease, is during infancy, greatest in the brain, during adolescence, greatest in the Spleen, and in mature age greatest in the liver, hence

the infant will most frequently have as the consequence of fever hydrocephalus, the youth an enlargement of the Spleen, and the adult Chronic Hepatitis; These local arrangements appear to originate from a common cause and are perhaps similar in nature; and all this we esteem strongly corroborative of our fundamental position that a diseased state of the brain is the immediate cause of death in Cholera Infantum

